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AUTHOR Cronin, John Patrick
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ABSTRACT

Reviewed is literature and research on the use of psychoactive drugs for control of hyperkinesis in children. Briefly discussed are such topics as the prelevance (close to 1.5 million children on medication) of drug therapy, the misuse of stimulant drugs in the schools, the three major drug groups (stimulants, anticonvulsants, and antidepressants) used in treating hyperactivity, problems (including side effects such as loss of appetite) involved with drug therapy, and alternative approaches (which include diet regulation) for treating hyperkinesis. (SB)

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The Use of Psychopharmaceutical Stimulants For the Control of Childhood Hyperkinesis

by

John Patrick Cronin

Minneapolis Public Schools
University of Minnesota
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The creation and maintenance of the perfect child is an arduous task. For people faced with the task of dealing with less-than-perfect children (often found in the category of hyperactive or hyperkinetic) the task must often seem impossible. In this age of psychological and educational enlightenment many members of the "helping professions" have joined harried parents in a contemporary approach to solve this malady with the most expeditious solution. That solution for hyperkinesis what this paper addresses: the use of psychoactive drugs for control of hyperkinesis in children.

The problem is actually two-fold: (1) What is hyperactivity? and (2) What is the best way to treat this condition? Coupled with the ostensible question is a host of correlates which include: (1) Who should diagnose the problem? (2) Can it be diagnosed? (3) For whose benefit are the behavior controlling drugs being administered? and (4) What about alternative plans of therapy which have been proven effective on hyperactive children under medication? The list could be expanded and certainly no one group has the final word. This treatise will attempt to sort out these areas of concern and place them in perspective.

The difficulty with this area of research and concern is the lack of conclusive data pertaining to this facet of childhood behavior. Hyperactivity or hyperkinesis are terms often used interchangeably. Some researchers do not agree that they are synonymous stating that hyperactivity relates to environmentally based problems while hyperkinesis is linked to organically based problems (Murray, 1973). In this paper they will be used synonymously and it must be remembered that this condition (hyperactivity or hyperkinesis) is not something which arrived with "new math" on the local school level. The research is clear that hyperactivity effects children from all categories in the world with no regard for race, creed, religion, but it does effect boys nine times as often as girls (Bettelheim, 1973).

The inconsistency of the research is in defining the area of dysfunction since the same symptoms for hyperactivity are reported in dyslexia, and dyslexia effects males and females equally. Paradoxically, application of these "symptoms" to hyperactivity results in a nine-to-one ratio of the boys. (Bettelheim, 1973).

In terms of numbers, best "guesstimates" nationally indicate there are some five million children being treated in some fashion for hyperactivity (Feingold, 1975). The steady annual rise in this figure can indicate many things. Certainly the accuracy of diagnosis is among the top of the list. Since some five-to-twenty percent of the nation's children fit the category of hyperactive, it might do well to review the category in an entity.

Ironically, a great many of the behaviors treated in the scheme of "controlling hyperactivity" are behaviors we admire and enjoy, and often handsomely reward in the general population. Artists, athletes, scholars, entertainers, politicians, to name a few, often fit the vague and generic categories of hyperactivity. Often adults without "enough" activity are placed on the same types of medication (amphetamines) to increase their "activity" levels. Unfortunately, the medical and psychiatric society in America have determined what will be "normal activity" and if people do not respond at that level a wonder drug is in the offing.

The use of drugs to "cure" problems is an accepted fact of life in America and certainly America's availability to drugs and medical care have increased the comfort level and life expectancy of most of the residents to an unprecedented level in history. The suggestion is not to change that but to ask if the perspective is clear in the use of stimulant drugs to control children's "undesirable" behavior?

The symptoms of hyperkinesis include "...almost everything that adults don't like about children" according to Berkley Psychologist John Hurst (Classroom Pushers, 1973). Within the framework of identifying the problem it has been suggested that "Hyperactivity is like pornography: hard to define, but you know it when you see it" (Keough, 1971).

Historically, the use of drugs to control or alter behavior is not new; however, benefitted with the wisdom of hindsight, we often see the ill-effects of certain treatments many years after the fact (and effect.) Cocaine was introduced in Europe as a cure for opium addiction, depression, digestive disorders, typhoid fever and alcoholism by a young Viennese physician named Sigmund Freud (Rogers, 1971). We cannot fault doctors for doing what they know best: treating with chemicals. We can look, however, at some of the reasons why psychoactive drugs are used so frequently.

The primary reason for using stimulant drugs on hyperactive behavior is simply that the drugs do convincingly work. They have the desired effect on some 20 to 88 percent (depending on whose study you read) of the children on whom they are used (Stewart and Olds, 1973). (A discussion of the side-effects will be found later in this paper.) The number of children under medication is close to 1.5 million (Arehart-Treichel, 1974), and applying financial data from 1971 for the manufacturer of Ritalin (CIBA Pharmaceutical) the sales of this drug alone netted some $10 million for this company during that year (Rogers, 1971). Ritalin comprises about 58 percent of the market for stimulants used for hyperactive behavior control, and keep in mind that drug companies spent an average of $4,200 per doctor for the advertising of drugs in the various journals during 1970 (Rogers, 1971).

A truly "landmark" conference occurred in 1971 under the auspices of the U.S. Office of Child Development and HEW in which several of the leaders in this field were gathered to construct a position paper on the use of stimulant drugs for controlling behavioral disturbances in children (Freedman, 1971). Like the "paradoxical" effect of stimulant drugs on hyperactivity, this group came to a paradoxical conclusion reporting the definition, diagnosis and treatment plans were too difficult to assess adequately, yet, they affirmed the use of stimulant drugs if "good Judgment" was used by the physician. They also cautioned the drug companies to stay out of the picture and to stay out of the schools (Freedman, 1971). This conference is important historically since it literally endorsed the use of psychoactive stimulant drugs throughout the country.

Notwithstanding the fact that Charles Bradley reported "spectacular" effects of benzedrine on children with school disturbance problems in 1937 (Bradley, 1937), the use of stimulants did not become well known until the

late 1960's. The big splash occurred on June 29, 1970 when the Washington Post reported that from five-to-ten percent of the 62,000 grammar school children in Omaha, Nebraska were being treated with "behavior modification drugs to improve classroom deportment and increase learning potential" ("Omaha pupils given 'behavior' drugs," 1970).

The evidence began to mount regarding the indiscriminate use of psychoactive drugs. As recently as 1971 in an editorial in the Journal of Learning Disabilities, Eric Denhoff said, "In the 1950's educators learned about [the] ...psychopharmacological aspect of behavior modification, and began to encourage parents to seek such help from the child's physician. Soon it became evident that these drugs were being used indiscriminately--prescription would depend mostly upon a description of behavior by a teacher or parent" (Denhoff, 1971). And herein lies perhaps the greatest danger and misuse of stimulant drugs: diagnosis and compliance to a psychoactive drug program by schools, for the benefit of the school program.

Examples of the misuse of stimulant drugs in the schools are cited by Hentoff like the case of a New York mother whose child was labled "hyperactive" by his elementary teacher and received an ultimatum from that teacher to "... put the child on drugs or we will not be able to keep him in school" (Hentoff, 1972). A southern California mother stated, "We've been harassed and pressured by the school for four years now to put our nine-year-old on medication--for hyperactivity--and we've refused for four years. Two family doctors have backed up our decision" (Hunsinger, 1970). Grinspoon reports, "A Colorado mother told of how she reluctantly 'caved in' to the combined requests of the school nurse, the school psychologist, principal, and the teachers' that she put her six-year-old son on medication to treat his 'learning disability'" (Grinspoon, 1973).

The use of amphetamines in the Baltimore school system reached alarming proportions by 1970 causing Dr. H. M. Selznick, then school superintendent of special education, to acknowledge the lack of guidelines and controls concerning the responsibility for the administration of the drugs. He said, "We do not want teachers administering the drugs since they are not medically trained. But, it is our suspicion that some teachers who have had 'wall climbers' do assume this responsibility" (Miller, 1970).

Needless to say, the classroom teacher is certainly in a position to influence greatly the kinds of approaches used on hyperactive children. Unfortunately, for the child's sake, the teacher is often victimized in her attempt to deal with the "non-conforming" behavior as much as the child. In the crowded classrooms characterizing most schools in American the teacher is often forced by necessity, strain, lack of time or funds, inexperience, lack of training, or whatever, to resort to the two-rule basic system of education: (1) sit down, and (2) shut up. For many children such systems do not present an obstacle. Additionally, the type of child who does not function in most typical classrooms is found to have less visible problems contributing to this condition (Bettelheim, 1973).

Many people who allow hyperactivity to exist clinically (as diagnosable and treatable) are separating hyperactivity and "learning disability" (Keough, 1971; Bettelheim, 1973; Weithorn, 1973). Keough elaborates that three areas of hyperactivity and learning disability are quite similar: (1) symptoms suggest Minimal Brain Dysfunction (2) motor dysfunction and, (3) excessive impulsivity (Keough, 1971).

The labeling trap rears its head again with the definition of "learning disorders" actually coming from the definition of "organic dysfunction" (Weithorn, 1973). Weithorn points out that Psychogenic factors are often confused with Neurogentic factors. He recommends the discarding of the notion that the Central Nervous System is the primary dysfunction involved in hyperkinesis (Weithorn, 1973). If labels are needed, "delayed and irregular maturation" might suffice (Abrams, 1968). At least the lion's share of the treatment concern should be with "treating the symptoms until the etiologies are discovered" (Weithorn, 1973).

Some attempts to deal with symptoms have not yielded much. This is not necessarily a fault of the approach, yet considering the lack of definition in this area, it is an easy pit to land in. For example, one pro-Ritalin physician from southern California, David Martin, compiled a list of nine "danger signals" indicating a child's need for medication: (1) hyperactivy (2) low frustration level (3) aggressiveness (4) impulsiveness (5) reliance on companionship (6) inability to postpone gratification (7) poor school performance (8) poor peer relationships (9) overt hostility (Rapport, 1971). The list speaks for itself and fundamentally describes many children before the age of twelve. Interestingly, Martin contends that "anyone" is capable of diagnosing hyperactivity and recommending medication. He strongly suggests that teachers take an assertive role in bringing medical intervention to any child they feel it could change (Rapport, 1971). The American Academy of Pediatrics recently reflected some concern for this type of practice (Classroom Pushers, 1973), but has the psychopharaceutical barndoor been open too long?

Ostensibly the camps are organized into three forces: (1) The use of stimulant drugs is justified since it allows children the opportunity to function in situations, like classrooms, that they would be denied with their "normal" level of hyperactivity (2) Some medication is justified for extreme cases and for short periods. This treatment should be integrated with other types of treatment such as behavioral counseling, family counseling, dietary adjustment, and the like, with removal when possible, and (3) No medications at all are justified for the treatment of hyperactivity. Psychoactive drugs are a cover-up for the real problems and use of this approach denies the child the opportunity to learn to deal with his problems.

The pro-drug group is essentially the physicians, and is by law, the only group allowed to dispense drugs. It is also from this medical framework that the treatment of hyperactivity is approached with concomitant theories relating to organic dysfunction. The assumption is that hyperactivity manifests itself physically; thus, the causality is physical, and the remedies must too lie in the organic treatment approach. Originally this group viewed the neurological signs for clues and on the basis of "hard" and "soft" signs began the search for brain dysfunction. Here exists the

origin of the Minimum Brain Dysfunction (MBD) approach and the variety of drugs developed to treat this disorder by bringing a "normalizing action" (Pope, 1970). Some people feel drugs are "appropriate for hyperactivity but not for learning disabilities" (Glennon and Nason, 1974). Wunderlich reported numerous successful treatment with the various psychoactive drugs. He also favors megavitamin therapy for hyperactivity and relates much of the cause to allergies (Wunderlich, 1973). Citing specific areas of organic concern, Wunderlich mentions niacin, calcium, pyridoxine, corticosteroids, antihistamines, anticonvalsants, food elimination, air filtration, allergic desensitization, perceptual-motor training and behavioral counseling as other areas to consider in assessment and treatment of hyperkinesis (Wunderlich, 1973).

The proponents of stimulant therapy generally agree that little is known of the long-term effects and do not usually recommend drug usage beyond puberty. The research indicates that children often out-grow this condition around twelve years of age and drug research claims there is little danger of carry-over of drug use to later life. Although some physicians claim prescribing stimulants to children as young as two, the pharmaceutical companies now recommend waiting at least until the age of five (Repo, 1971).

The actual effect of the stimulant drugs is not entirely clear. Some report the effect as "paradoxical" since the stimulant has the opposite (or a calming) effect on children with a high stimulated level of behavior (Wunderlich, 1973). Others maintain the effect is not "paradoxical" at all but that drugs are in fact "stimulating" the necessary portions of the brain and central nervous system that allow the child to focus on a particular activity without the usual distractions preventing him from completing that activity (Conrad, 1971; Comly, 1974). The usual drugs used are the stimulants to the central nervous system such as amphetamines (Dexedrine, Benzedrine, Medex, D-Amphetasul), methylphendiate (Ritalin), magnesium pemoline (Cylert), and deanol (Deaner). Other drugs used to control children's behavior by altering their brain wave patterns are tranquilizers and sedatives. The most commonly prescribed tranquilizers are thioridzine (Mellaril), chlorpromazine (Thorazine), and hydroxyzine (Atarax). The first two are generally regarded as "major tranquilizers" and belong to the family of phenothiazines which include other drugs sometimes prescribed for hyperactive children: prochlorperazine (Compazine), perphenzine (Trilafon), and fluphenazine (Prollixin). Also in this "major" group is chlorprothizene (Taractan). "Minor" tranquilizers, much like sedatives, contain the following: meprobamate (Miltown), chlordiazepoxide (Librium), and diazepam (Valium). Although their prescription is frequent, the "effectiveness is doubtful" (Stewart and Olds, 1973). The only sedative ordinarily prescribed for children is the barbiturate phenobarbial (Luminal), and this usually intensifies the problem by increasing restlessness and excitement (Stewart and Olds, 1973).

Another group of medicines include the various anticonvulsants. When a child's electroencepholgram profile is "spiky" like that of epilepsy, it is common to prescribe anticonvulsant medication even though the child has never had a seizure. These drugs include: diphenylhydantoin (Dilantin, Denly Sodium, Diphentoin, Diphenylan Sodium, Ekko, Danten). Occasional use is noted for primidone (Mysoline) and ethosuximide (Zarontin). Many negative side effects are observed with these drugs.

The third major drug group, apart from the CNS stimulants, is the anti-depressant group. They include: imipramine (Tofranil), nortriptyline (Aventyl), and amtriptyline (Elavil). These drugs are generally prescribed for adults with depression and the research indicates that "depression" is not a serious medical problem with children. One study of some 6,000 elementary children identified only two "who might have been depressed" (Stewart and Olds, 1973).

Practical problems of drug prescriptions for children is the common practice by physicians of using the drug as the diagnostic tool. Stewart points out "He [the physician] prescribes them for a child, and if they have the desired effect, the doctor feels he has proof that the child must be a 'true' hyperactive child" (Stewart and Olds, 1973). This is an unfounded conclusion since the medicines do not have specific actions dealing with the variety of problems they prescribed for (Bettelheim, 1974).

The reports vary concerning the long-term effects of psychoactive drugs, but the range in which they vary is interesting. The pro-drug group say no psychological harm is found and little incident of carry-over to drug abuse in later life (Laufer, 1971). Unfortunately, much of Laufer's data is incomplete with less than half of the sample responding, and the sample is composed of the parents of hyperactive children who were treated with psychoactive drugs. On the other hand, Bettelheim reports from his clinic, "Nearly all middle-class drug addicts with whom we have worked were given drugs as children--to modify behavior troublesome to the parent (Bettelheim, 1973). Certainly the evidence is clear that relatively high doses of Ritalin (30 to 40 mg. daily) or amphetamine (10 to 15 mg. daily) over a period of nine to twenty-four months causes weight loss and a decrease in the growth in the height of the child (Stewart and Olds, 1973). Side effects are usually controlled by lowering the doseage.

The developing of a tolerance for methylphenidate (Ritalin) is quite common and the general practice is to increase the doseage or switch the child to one of the amphetamines. The switch is usually done when the child is already being given a large dose of Ritalin or when any of the undesirable side-effects such as: (1) loss of appetite (2) difficulty getting to sleep at night (3) the wan pinched face with sunken eyes known as the "amphetamine look", and (4) sadness with a tendency toward crying spells (Stewart and Olds, 1973). Tolerance is uncommon with amphetamines.

The drug proponents also cite such studies showing stimulant drugs that control hyperactivity in a formal setting do not impair activity on an informal level, although the drugs do alter the "attentional mechanisms" (Reynolds and Sprague, 1974). Also they point to studies indicating "intellectual functioning" in older boys might be altered slightly but not in younger boys and this could be attributed to a "lack of mastery on the part of the older boys" on the skill items (Loney, 1974). It is further advanced that drugs effect the "expression of endowment (i.e., functioning) rather than endowment per se" (Loney, 1974). Some parents feel "saved" by the dual technique using drugs as the focal point doubting that their child would have survived a regular school program without psychoactive drugs (Schoenrade, 1974).

Part of the problem is that the behavioral expectancy descrepancy between psychiatrists and teachers is significant. Psychiatrists estimate the prevalence of hyperkinesis among elementary children ranging between four to ten percent (Eisenberg, 1972; Stewart, et al, 1966), while the teachers estimate hyperactive incidence ranging from 15 to 20 percent (Yanow, 1970).

The group advocating a position utilizing both a drug and non-drug approach try to adhere to the "common sense" position of the HEW Report (Freedman, 1971) while keeping the interests of all concerned parties in mind (Harlin, 1972). Conners notes that "fads" are often used to deal with this type of problem in children and outlines five areas that speak for this type of integrated or dual approach: (1) Accurate diagnostic tools are lacking (2) Psychoactive drugs reduce the quality of activity and goal directedness (3) Drug treatment can work for educational problems (4) Follow-up and understanding of the long-term effects is needed, and (5) The best treatment is a combination of Special Education programs and drugs (Conners, 1973).

The third major camp argues for: (1) better diagnostic procedures (2) better training for all levels of the "helping profession" (3) cessation of psychoactive drug treatment or any type of treatment that does not deal with the child's "real problem", and (4) immediate and effective plans for blending the "hyperactive" child into the main body of the society. This includes school, home, medicine, public facilities and activities, and the society-at-large.

Many investigators point out that attitudes dealing with drug treatment of the hyperactive child are difficult to change owing to the acceptance of psychoactive drugs in the nation's adult population. Specifically, in 1972 "one out of three Americans used a psychoactive drug" (Parry and Cisin, 1973). The anti-drug group can also be discussed in terms of the positive kinds of techniques they advocate; however, a general overview of the anti-chemical group would begin with the universal notion that a detailed physical and psychological examination is paramount. A noted California neuropsychiatrist, Sydney Walker, relates many problems he has had in treating hyperactivity in children were simply the result of a misdiagnosis or an incomplete diagnosis (Walker, 1974). He cites three primary areas of deficiency that are critical in diagnosing hyperactivity: (1) oxygen (2) glucose, and (3) calcium. After extensive testing in these areas, Walker reviews psycho-and socio-histories of the child. He has found "hyperkinetic children" (diagnosed by other physicians) who were actually suffering from such things as pinworms, food additive imbalance, and tight underwear (Walker, 1974). Walker claims a high "cure" rate and states he never has, nor ever will prescribe a psychoactive drug to deal with a child's hyperactivity (Walker, 1973).

Keeping the notion clear that many factors can cause hyperactive behavior and applying a not-so-novel approach that correcting those areas might alleviate the total problem, other significant treatment inroads have been forged in the area of diet and nutrition. Perhaps the most renowned currently is the work of Ben Feingold at the Kaiser-Permanente Research Center in California. Feingold states that there are over five million children in the hyperkinetic condition and feels many could be helped by following his diet. The Feingold

diet deletes all synthetic food coloring and flavoring (e.g., cookies, ice cream, hot dogs, dry cereal, etc.) and finds "hyperactive children" able to function without the use of psychoactive drugs (Feingold, 1975). Although his study included but 25 initial subjects (of which 16 were noted to have "dramatic improvement") the California public schools are changing their dietary regulations to conform with this concept (Feingold, 1975). Other investigating in this area have noted the presence of "aniline coal tar dyes" in processed foods related to hyperkinesis in children (Hawley and Buckley, 1974). They point out that "nutritional factors are critical...even in children successfully treated with stimulant drugs" (Hawley and Buckley, 1974). Of course, one of the practical problems is finding enough foods that do not contain the harmful additive and make them palatable to the child.

Another simple solution to controlling hyperactive behavior was reported by Schnackenberg in giving two cups of coffee to the child each morning ("How Coffee Calms Kids", 1973). Schnackenberg found that just two cups of coffee (approximagely 200-300 mg. of caffeine) is usually enough to calm the child and remove him from psychoactive drugs. Most importantly was the fact that the undesirable side-effects of psychoactive drugs were not present. He also reported that incidence of hyperkinesis in children is much lower in South American where the children drink coffee quite regularly. Tea and soft drinks do not contain enough caffeine to be effective ("How Coffee Calms Kids", 1973).

One of the most dramatic discoveries came from a Walt Disney time-lapse photographer named John Ott. In his many years of field work (over 50) in lighting, plant pathology, photography, and the like, he noticed certain characteristics about the effect of certain lights on plant growth (Mayron, Ott, et al, 1974). From this initial idea, Ott and a research team devised an experiment in the Sarasota public schools using four elementary classes averaging 30 students per class. Several of the students in all four of the classes were diagnosed "hyperactive" and were in danger of being removed from these regular classes to special classes to deal with their negative behaviors. In two of the classrooms Ott had the standard flourescent lights changed to a flourescent bulb he developed with longer ultraviolet wavelengths (2,900 to 4,000 angstroms) making the new lights similar to sunlight. Standard flourescent lighting is deficient in "sunlight rays." He also eliminated the x-rays and the radio waves common in flourescent lighting for the experiment. Following a 90 day trial period, significant reduction in hyperactivity was documented in the two rooms designated "experimental" while the "non-treated" groups maintained the same behaviors (Arehart-Treichel, 1974).

Other successes of the Ott theory have been reported such as the group of "hyperactive" children who were found by Ott to be suffering from the same "problem": home televisions that were all leaking considerable amounts of x-ray. Following the television set repair, <u>all</u> of the children became "normal" again according to their family and school personnel (Arehart-Treichel, 1974). It is Ott's contention that the radio waves affect the CNS in behavioral and transient changes. The implications here for education and institutions are staggering. How many schools in America light their facilities with standard flourescent lights? Perhaps it is a moot question.

Other alternatives to drug use cite the lack of diagnosticians' foresight in viewing hyperkinesis as a "single-factor deficit model" (Freidland and Skilkret, 1973). They concern themselves with the hyperactive behavior that occurs in the "interpersonal context." Hyperactivity is seen as a "coping device for children who are anxious about forming relationships with others, particularly adults" (Freidland and Skilkret, 1973).

Perhaps the effect of drug use for behavior control of children is best articulated by a child psychiatrist who has changed much of his professional opinion over the last few years. Mark Stewart writes:

> Suppose your doctor recommends that your hyperactive child be given stimulants specifically to help him do better in school, that you are confident he will supervise the treatment carefully, and that he says you should plan for the phasing out of the drug before the child enters the seventh grade. Do you still hold back? we suggest that you should.
>
> There is no evidence that hyperactive children learn good habits because they concentrate better and follow directions more readily when they are on drugs. It is widely assumed that over a long period pharmacological control of a child's behavior will lead to self-control but the results of the follow-up studies we cited in Chapter 3 do not support this idea...Perhaps he has learned some control while on drugs, but it is not strong enough to restrain his natural behavior.
>
> We think that parents should plan for the worst outcome while hoping for the best; they should assume that any good effect of the drug is temporary. They then have to consider what they can do to help their child learn to control his behavior, what they can expect from teachers along the same lines, and when is the best time to start working.
>
> (Stewart and Olds, 1973).

It should not be construed from this paper that any one approach has the inside-edge in the race for truth; rather, it would be hoped that all members in the "helping fields" look closely at their practices and examine if what they are doing is in the best interests of the child.

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